

## REMARKS

### A. Introduction

Claims 1-12 were pending in the application at the time of the Office Action. Claims 1, 5, and 9 were rejected as being anticipated by and/or obvious over cited art. Claims 2-4, 6-8, and 10-12 were objected to as being dependent on rejected base claims. By this response, Applicant has rewritten claims 2 and 3 in independent form to incorporate most of the limitations of claim 1, from which claims 2 and 3 previously depended, and added new claim 13. The new claim and amendments to claim 1 are supported in the application at least at Figure 1. In view of this, Applicant submits that the amendments to the claims do not introduce new matter and entry thereof is respectfully requested. Claims 1-13 are presented for the Examiner's consideration in light of the following remarks.

### B. Allowable Subject Matter

Page 2 of the Office Action objects to claims 2-4, 6-8, and 10-12 as being dependent upon a rejected base claim, but states that those claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, as noted above, Applicant has herein rewritten claims 2 and 3 in independent form incorporating most of the limitations of claim 1 from which claims 2 and 3 previously directly depended. Applicant notes that claims 2 and 3 do not include the polarization mode coupling limitation set forth in claim 1. Notwithstanding, Applicant submits that claims 2 and 3, as well as corresponding dependent claims 3, 4, 6-8, and 10-12, are in allowable condition.

Applicant submits the following comments concerning the Examiner's statements of reasons for the indication of allowable subject matter set forth in the Office Action. In general,

Applicant agrees with the Office Action that the inventions to which claims 2-4, 6-8, and 10-12 are directed are patentable over the cited references, but respectfully disagrees with the statement of reasons for allowance as set forth in the Office Action.

Particularly, Applicant submits that it is improper to characterize a single limitation, or subset of limitations, as constituting the basis for allowance of a claim. Rather, the patentability of a claim is properly determined with reference to the claim as a whole. Accordingly, Applicant does not concede that the reasons for allowable subject matter given by the Office Action are the only reasons that make, or would make, the claims allowable and Applicant does not make any admission or concession concerning the statements in the Office Action concerning the allowability of claims 2-4, 6-8, and 10-12 in view of the cited references.

C. Anticipation Rejection

Pages 2 and 3 of the Office Action reject claim 1 under 35 USC § 102(b) as being anticipated by U.S. Patent No. 5,974,216 to Nakaya et al. (“*Nakaya*”). Applicant respectfully traverses this rejection and submits that *Nakaya* does not anticipate claim 1 at least because *Nakaya* does not include each and every claim limitation recited in the rejected claim.

*Nakaya* discloses an optical waveguide electrically controlled variable attenuator. See Abstract. As shown in Figure 1 and discussed in col. 5, line 54 to col. 6, line 8, the *Nakaya* attenuator discloses an input waveguide 7a that is split into two separate waveguides 7b and 7c by a polarization beam splitter 10a. Waveguides 7b and 7c are then respectfully input in a parallel fashion into directional coupler switches 11a and 11b. Applicant notes that it is these directional coupler switches 11a and 11b that the Office Action respectfully equates to the “first optical coupler,” and the “second optical coupler” recited in claim 1. See Office Action at p. 3.

Second waveguides 7h (erroneously labeled as 7b) and 7i are respectfully output, also in a parallel fashion, from directional coupler switches 11a and 11b and combined into a single waveguide 7j by a polarization coupler 10b.

Applicant has amended claim 1 herein to clarify that the two arm waveguides connect the first optical coupler to the second optical coupler “in series.” However, as noted above, *Nakaya* only discloses that the directional coupler switches 11a and 11b are connected by the waveguides 7b, 7c, 7h, 7i in a parallel fashion.

As such, even if, *arguendo*, directional coupler switches 11a and 11b are considered to correspond to the claimed “first optical coupler” and “second optical coupler”, Applicant submits that *Nakaya* still fails to disclose “**a first optical coupler; a second optical coupler; [and] two arm waveguides connecting said first optical coupler to said second optical coupler in series...**”

Furthermore, Applicant submits that *Nakaya* also fails to disclose “**wherein each of said first optical coupler and said second optical coupler is a directional coupler having a region in which said two arm waveguides are brought in close proximity to each other.**”

Finally, the Office Action alleges that Figure 2 of *Nakaya* teaches “values of mode coupling attenuation that is less than -25 dB.” Applicant notes, however, that Figure 2 of *Nakaya* denotes relationships between a control voltage and a cross-port attenuation, not relationships between a waveguide birefringence and a polarization mode coupling for a directional coupler cross port, as shown in Figure 4 of the present invention.

In view of the foregoing, Applicant respectfully requests that the anticipation rejection of claim 1 be withdrawn.

D. Obviousness Rejection

Pages 3-4 of the Office Action reject claims 5 and 9 under 35 USC § 103(a) as being unpatentable over *Nakaya* in view of U.S. Patent Application Publication No. 2004/0141691 to Wiesmann et al. (“*Wiesmann*”). *Wiesmann* is cited simply for allegedly disclosing a silicon substrate with silica based waveguides and a phase controller electrode. Applicant respectfully traverses this rejection.

Claims 5 and 9 depend from claim 1 and thus incorporate the limitations thereof. As such, Applicant submits that claims 5 and 9 are distinguished over the cited art for at least the same reasons as discussed above with regard to claim 1. Accordingly, Applicant respectfully requests that the obviousness rejection with respect to claims 5 and 9 be withdrawn.

No other objections or rejections are set forth in the Office Action.

E. New Claims

Applicant submits that new independent claim 13 is distinguished over the cited art of record. For example, claim 13 recites “a first optical coupler … a second optical coupler … [and] two arm waveguides, each of the arm waveguides optically connecting the output portion of the first optical coupler to the input portion of the second optical coupler. ” As discussed above with regard to claim 1, however, *Nakaya* fails to teach or suggest the aforementioned limitations in conjunction with the other limitations of claim 13. As such, Applicant submits that claim 13 is distinguished over the cited art for at least the same reasons discussed above regarding claim 1.

F. Conclusion

Applicant notes that this response does not discuss every reason why the claims of the present application are distinguished over the cited art. Most notably, applicant submits that many if not all of the dependent claims are independently distinguishable over the cited art. Applicant has merely submitted those arguments which it considers sufficient to clearly distinguish the claims over the cited art.

In view of the foregoing, applicant respectfully requests the Examiner's reconsideration and allowance of claims 1-13 as amended and presented herein.

In the event there remains any impediment to allowance of the claims which could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate such an interview with the undersigned.

Dated this 16th day of January 2008.

Respectfully submitted,

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